

Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington, D.C. 20554

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**JUN 18 1996**

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF SECRETARY

In the Matter of )  
)  
**Amendment of Parts 2 and 15 of the** )  
**Commission's Rules Regarding Spread** )  
**Spectrum Transmitters** )

**ET Docket No. 96-8**  
**RM-8435, RM-8608, RM-8609**

**DOCKET FILE COPY ORIGINAL**

To: The Commission - Mail Stop 1170

**COMMENTS OF R A M A R TECHNOLOGY, LTD.**

1. **Introduction.** R A M A R Technology, Ltd. ("RAMAR") hereby submits these comments in response to the Commission's *Notice of Proposed Rule Making* ("NPRM") in the above-captioned proceeding, FCC 96-36, released February 5, 1996. RAMAR is a manufacturer of electronic equipment based in the United Kingdom and plans to enter the U.S. market in the near future, primarily through the manufacture and marketing of low power devices for unlicensed use under the Part 15 of the Commission's Rules, including devices utilizing spread spectrum technology in the 902-928 MHz band. As a manufacturer of equipment, including UHF devices operating below 470 MHz band and in the 902-928 MHz band, RAMAR has an interest in this proceeding, particularly with regard to the Commission's proposed changes for short duration transmission systems and spectral power density limits applied to frequency hopping systems with fewer than 50 hopping channels. RAMAR urges the Commission to recognize that short duration systems offer many of the desirable interference-avoidance characteristics of frequency-hopping systems. Accordingly, the power limits applicable to short-duration systems should recognize these characteristics when the duration is sufficiently short, to fulfill the Commission's objective

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to “expand the ability of equipment manufacturers to develop spread spectrum systems for unlicensed use”.<sup>1/</sup>

2. Short Duration Transmission Systems. At paragraph 40 of the NPRM, the Commission invites alternative proposals for short duration transmission systems. It proposes to leave intact the existing criteria for frequency hopping systems, requiring that products being authorized as frequency hopping systems be capable of acting as true frequency hopping systems if they are to take advantage of the frequency hopping rules, rather than simply being short duration transmission systems. Short duration transmission bursts are accommodated under Section 15.231(e) of the Rules, which specifies lower power levels than are available to frequency hopping systems. The difference in the power levels permitted for the two technologies is currently substantial. It is RAMAR's view that this difference, as it now stands, overcompensates for the increased harmful interference that a short transmission system may cause to other users.

3. RAMAR proposes that the Commission allow short duration transmission systems to operate under Section 15.231(e) at power levels more reflective of their limited interference potential, provided that the duration of the transmission period is suitably short. A transmitter duty cycle of 1% or less would constitute a short duration transmission under this proposal. Further, the peak power restriction<sup>2/</sup> under Section 15.231(e) should be replaced by limit on the average field strength of the fundamental, integrated over one second. The table in Section 15.231(e) would then become:

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<sup>1/</sup> NPRM at p. 2.

<sup>2/</sup> For example, the field strength of the fundamental.

| Fundamental frequency (MHZ) | <u>Average</u> field strength of fundamental (microvolts/meter) | <u>Average</u> field strength of spurious emission (microvolts/meter) |
|-----------------------------|---|---|
| 40.66-40.70                 | 1,000   | 100   |
| 70-130                      | 500   | 50  |
| 130-174                     | 500 to 1,500  | 50 to 150   |
| 174-260                     | 1,500   | 150   |
| 260-470                     | 1,500 to 5,000  | 150 to 500  |
| Above 470                   | 5,000   | 500   |

The above table would apply when the average field strength is taken over one second, *i.e.*, the peak power is integrated over one second. If the Commission feels that the one-second duration is not sufficiently restrictive, then, as an alternative, the average field strength limit could apply to transmitters with duty cycles of 1% or less.

4. As the Commission itself recognizes, any interference potential resulting from an increase in power is more than compensated for by shortness of the transmission duration. Thus, under RAMAR's proposal, if the transmission is indeed short, then it is actually less interfering than the "control" or "status" transmissions at the higher permitted power levels in the current Section 15.231(b).

5. RAMAR's proposal minimizes interference between spectrum users while promoting more flexible and efficient use of the radio spectrum. The intent of Section 15.231 is principally to limit continuous transmissions, such as voice and video or continuous data. These are high duty cycle transmissions which have much more potential to interfere with other users than short-duration data bursts. RAMAR's proposal is consistent with the intent of the rule but avoids undue restriction where it is not needed. By recognizing that very short duty cycle data transmissions

produce no more interference than control signal transmitters under Section 15.231, the Commission would allow more users on the spectrum without causing interference to other users.

6. There are many short duty cycle data transmitters that could benefit from adoption of RAMAR's proposal. Included among them are remote utility meter reading devices, which require the exchange of only a small amount of data and transmit for only a very short period of time on widely spread occasions.<sup>3/</sup>

7. Spectral power density limits. The Commission also invites comments on whether a spectral power density limit that now applies to direct sequence spread spectrum systems should be applied as well to frequency hopping systems with fewer than 50 channels. The best way to reduce the interference potential of frequency hopping systems is to increase the number of hopping channels, thereby minimizing the time in which any one channel is occupied. However barring Commission action maintaining a high number of channels, then a suitable limit on the power output of frequency hopping systems should be applied. Such a rule would allow more users of technologies other than frequency hopping to occupy the spectrum. Under those conditions, RAMAR supports the Commission proposal and further proposes that similar spectral power density limits be applied to all frequency hopping transmitters, regardless of the number of hopping channels.

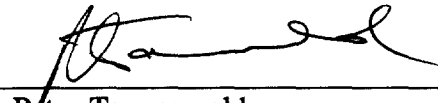
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<sup>3/</sup> Remote utility meter reading devices are among the products RAMAR plans to market in the U.S..

8. Conclusion. RAMAR submits that its proposals will result in more efficient use of the radio spectrum by reducing interference between users while promoting the maximum spectrum use, thereby enhancing future opportunities for the development of products.

Respectfully submitted,

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